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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,933	04/30/2001	Bruce Leroy Beukema	ROC920010009US1	3353

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EXAMINER

SWEARINGEN, JEFFREY R

ART UNIT PAPER NUMBER

2145

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/845,933	Applicant(s) BEUKEMA ET AL.	
	Examiner Jeffrey R. Swearingen	Art Unit 2145	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. The objection to the drawings is hereby withdrawn.
2. The objection to the specification is hereby withdrawn.
3. The rejections under 35 U.S.C. 101 are withdrawn based upon Applicant's amendment of 8/2/2005.
4. Applicant's arguments with respect to claims 1 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 1-2, 6-10, 15-20, and 22 are rejected under 35 U.S.C. 102(a) as being anticipated by Wipfel et al. (U.S. Patent No. 6,151,688).
7. In regard to claim 1, Wipfel discloses *communicating a port identifier from a first node to a second node coupled to the first node over a point-to-point network* (remote probing retrieves a value identifying the problem in a node; Wipfel, column 4, lines 15-25); *wherein the first node includes a plurality of network ports and a plurality of communication registers* (Wipfel, column 6, lines 15-24; Wipfel, column 8, lines 16-30), *wherein each network port is configured to directly couple to an adjacent node in the clustered computer system over a point-to-point interconnect in the point-to-point network* (Wipfel, column 7, lines 10-18), *wherein each communication register is dedicated to an associated network port among the plurality of network ports and is configured to store data received over such associated network port* (Wipfel, column 8, lines 16-30), *and wherein the port identifier identifies a network port among the plurality of network ports to which the second node is coupled to the first node* (Wipfel, column 4, lines 15-

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25); and communicating data from the second node to the first node by initiating a write operation using the second node to store the data in the communication register associated with the network port identified by the port identifier (column 10, lines 13-17, column 11, lines 61-63).

8. In regard to claim 2, Wipfel is applied as in claim 1. Wipfel further discloses *detecting in the first node the storage of data in the communication register associated with the network port identified by the port identifier.* (column 9, lines 24-63).

9. In regard to claim 6, Wipfel is applied as in claim 1. Wipfel uses the buffers (column 8, lines 7-30) to execute debugging (column 7, lines 56-65). Debugging would inherently store commands sequentially and execute them sequentially. The rejection to claim 1 has shown the communication of port identifiers and communicating information based on those port identifiers.

10. In regard to claim 7, Wipfel is applied as in claim 1. Wipfel further discloses *initiating, with the second node, a read operation for a configuration register in the first node, wherein communicating the node identifier is performed in response to the read operation.* This is the probing disclosed in Wipfel, column 9, lines 24-63.

11. In regard to claim 8, Wipfel is applied as in claim 1. Wipfel further discloses *communicating the node identifier is performed in response to a read request sent over the point-to-point network by the second node.* This is the probing disclosed in Wipfel, column 9, lines 24-63.

12. In regard to claim 9, Wipfel is applied as in claim 1. Wipfel further discloses *the plurality of communication registers are allocated a range of register addresses in a register address space for the node (Wipfel, column 8, lines 7-30), and wherein communicating the data comprises sending a write request to the register address of the communication register associated with the network port identified by the port identifier.* (column 9, lines 41-48)

13. In regard to claim 10, Wipfel discloses *a plurality of network ports, each configured to couple a first node from a clustered computer system to another node in the clustered computer system over a point-to-point network* (Each of the nodes in Wipfel must have a port to connect to it. Wipfel provides an emergency communication channel [another port in addition to the one on the network] in column 7, lines 30-37. The point-to-point network is described in column 7, lines 10-18.); *a plurality of communication*

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registers, each dedicated to an associated network port among the plurality of network ports and configured to store data received through such associated network port (column 8, lines 16-30); and a control circuit coupled to the plurality of communication registers and configured to automatically notify the first node in response to storage of data in any of the communication registers (column 10, lines 13-27).

14. In regard to claim 15, Wipfel is applied as in claim 10. Wipfel further discloses *outputting a port identifier over a first network port among the plurality of network ports in response to a read request received over the first network port, the port identifier identifying the first network port as the network port from which the read request was received* (Wipfel, column 4, lines 15-25).

15. In regard to claim 16, Wipfel is applied as in claim 15. Wipfel further discloses *outputting data stored in the configuration register in response to the read request*. This is the probing disclosed in Wipfel, column 9, lines 24-63.

16. In regard to claim 17, Wipfel is applied as in claim 16. Wipfel further discloses *the plurality of communication registers are allocated a range of register addresses in a register address space for the node* (Wipfel, column 8, lines 7-30), *and wherein the control circuit is configured to store data received over a first network port among the plurality of network ports in the communication register associated with the first network port in response to a write request addressed to the register address of the communication register associated with the network port identified by the port identifier.* (column 9, lines 41-48).

17. Claim 18 has substantially the same limitations as claim 10; and the rejection of claim 10 is applied against claim 18.

18. Claim 19 has substantially the same limitations as claim 10; and the rejection of claim 10 is applied against claim 19.

19. Claim 20 has substantially the same limitations as claim 10; and the rejection of claim 10 is applied against claim 20.

20. In regard to claim 22, Wipfel discloses *a plurality of nodes* (column 7, lines 10-18) *including a plurality of network ports* (Each of the nodes in Wipfel must have a port to connect to it. Wipfel provides

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an emergency communication channel [another port in addition to the one on the network] in column 7, lines 30-37. The point-to-point network is described in column 7, lines 10-18.); *a plurality of communication registers, each dedicated to an associated network port among the plurality of network ports and configured to store data received through such associated network port*

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

22. Claims 3-5, 11-14, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wipfel in view of Lindsley (U.S. Patent No. 6,430,593).

23. In regard to claim 14, Wipfel is applied as in claim 10. Wipfel discloses the use of communication registers, or buffers, as previously shown in claim 10. Wipfel fails to disclose the generation of an interrupt to detect storage of data in a register by using a logical-OR operation. However, Lindsley teaches this functionality in column 27, lines 64-66 and column 28, lines 23-42. Lindsley is analogous art since Wipfel deals with nodes using buffers or registers, and Lindsley teaches hardware methods for use with registers to acceleration operation of a system. (Lindsley, column 6, lines 17-38). It would have been obvious to one of ordinary skill in the art to modify the Wipfel invention with the hardware techniques for detecting data as shown in Lindsley in order to assist in the probing in Wipfel. (Wipfel, column 11, lines 50-60, where status bits are set during probing, which are analogous to the interrupts that are set during the detection of data in a register by Lindsley).

24. In regard to claims 11-13, Wipfel is applied as in claim 10. As the analysis of claim 14 has shown, the modification of Wipfel with the known logical-OR steps of Lindsley discloses (claim 11) detection of data in registers by detecting a non-zero value (accomplished by the logical-OR steps explained above in Lindsley), (claim 12) automatically notifying a node by generation of an interrupt

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(accomplished by the logical-OR steps explained above in Lindsley), and (claim 13) generation of a common interrupt for all of the communication registers (The interrupt logic in Lindsley activates an interrupt when any bit in the interrupt register is set. The plurality of communication registers, or the buffers, in Wipfel is analogous to the interrupt register in Lindsley, as a register can be defined as a single hardware element or a group of hardware register elements combined and treated by the system as a single register.)

25. In regard to claim 21, Wipfel is applied as in claim 20. The additional claim limitations of claim 21 are substantially the same as the additional claim limitations of claims 11-13 or claim 14, and the above rejections are applied against claim 21.

26. In regard to claim 3, Wipfel is applied as in claim 2. The analysis of claim 14 has previously shown that Wipfel, modified with the register techniques of Lindsley, teaches generating an interrupt in response to detecting data in the communication register. Therefore the rejection of claim 14 is applied against claim 3.

27. In regard to claim 4, Wipfel is applied as in claim 3. Wipfel further discloses processing the data in the register (column 27, lines 55-67) and clearing the interrupt (column 28, lines 27-34).

28. In regard to claim 5, Wipfel is applied as in claim 4. Wipfel further discloses detecting non-zero values in the register (column 28, lines 27-30) and clearing the interrupt by resetting the values of the register (column 28, lines 30-34).

Conclusion

29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hagersten et al.	U.S. Patent No. 6,370,585
Wipfel et al.	U.S. Patent No. 6,338,112
James et al.	U.S. Patent No. 5,841,989
Sukegawa et al.	U.S. Patent No. 5,978,894
Dawson et al.	U.S. Pub. No. 2001/0013059
Shinkai	U.S. Patent No. 6,385,624

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Ethridge et al.

U.S. Patent No. 6,466,572

Blatter et al.

U.S. Patent No. 5,754,651

Van Seters et al.

U.S. Patent No. 5,812,775

Hoganson, Kenneth. "Workload Execution Strategies and Parallel Speedup on Clustered Computers."

IEEE Transactions on Computers. Vol 48, No 11. November 1999. 1173-1182

Shiomoto, Kohei et al. "Dynamic Burst Transfer Time-Slot-Base Network." IEEE Communications

Magazine. October 1999. 88-96.

Eberle, Hans et al. "Switcherland: A QoS Communication Architecture for Workstation Clusters." ACM

SIGARCH Computer Architecture News. Proceedings of the 25th annual international symposium on


Computer Architecture. Vol 26 Issue 3. April 1998. 98-108

30. Pursuant to Applicant's arguments and the new grounds of rejection, this action is hereby made non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. Swearingen whose telephone number is (571) 272-3921. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Cardone can be reached on 571-272-3933. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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SPE AU:2145